



# FIRE CREW FIREFIGHTER TRAINING

Procedures Handbook 4200

FIRELINE HAZARDS

Student Information Sheet 4204.2-1

## SUMMARY REPORT

FIRE LINE FATALITY  
OF  
A.HERNANDEZ  
C.D.C. INMATE FIRE FIGHTER

FIRE LINE INJURIES  
OF  
C.D.C. INMATE FIRE FIGHTERS

E. BUCKNER, GABILAN CREW #3  
R. HUBBARD, GABILAN CREW #3  
M. KNUTHSON, GABILAN CREW #3  
R. MATTHEWS, GABILAN CREW #3  
D. GRAYBEAL, GABILAN CREW #3  
E. PHILLIPS, GABILAN CREW #3

JULY 9, 1989

SAN BENITO/MONTEREY RANGER UNIT  
CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION  
Fire Academy July 1989



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On July 9, 1989, at approximately 2205 hours Inmate Fire Fighter Hernandez was fatally injured and six others on Gabilan Crew received injuries ranging from critical to minor when a redwood tree burned through the base and fell on the crew. The accident occurred on the Molera 2 fire in the Big Sur area of San Benito/Monterey Ranger Unit.

## FIRE LINE CONDITIONS:

**Fuel:** The accident occurred next to a stand of 156 year old coastal redwoods. Fuel loading in the area was approximately 24 tons to the acre, with fuels ranging from various species of light to heavy brush, several scattered varieties of trees including redwoods.

The Palmer Drought Index for the Big Sur area at this period of time ranged from -5.3 to -5.5. A reading of -4.0 is extreme. The thousand hour fuel moisture (large dead fuel) in California are in the 6% to 7% range (late July 1989). The critical level for thousand hour fuels is 11 %. With these conditions the heavier fuels on the fire and throughout California are much more serious than in normal year.

**Weather:** Was relatively calm and stable at the time of the accident.

**Topography:** Slope immediately surrounding the accident site ranged from 33% to 44%.

## SEQUENCE OF EVENTS:

On Saturday July 8, 1989, at 1648 hours, a vegetation fire was reported to the San Benito/Monterey Ranger Unit ECC. The fire was reported to be at the Molera State Park in the Big Sur area. The first units on scene were the Big Sur Fire Brigade (Company 13). Acreage at the time of arrival was 10-15 acres with a rapid rate of spread. The first C.D.F. equipment was Strike Team 9460C. Fire behavior was extreme with fire line crews experiencing severe burning conditions caused by steep terrain, cured fuels, and heavy shifting winds. The conditions were so bad that many crews had to back off to safe areas as visibility and fire spread worsened.

At approximately 0100 on July 9, 1989, a spot fire started in a grove of redwood trees where the accident occurred some 21 hours later.

On the eve of the accident the fire behavior had lessened considerably and the ground resources were able to make good progress on the line.

Gabilan Crews #3 and #4 arrived for their night shift assignment on Division "E" shortly before dark on July 9, 1989. The crew leaders were aware of the spot fire in the grove of redwoods.



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They discussed their action plan with Division supervisor Tony Cota (Division E) and then made a brief recon of the area. One of the primary objectives was to protect as much watershed as possible between their point and Highway 1. This was critical due to the past land slides in this area when ground covers were removed by fire.

Captain Milani (leader of Gabilan Crew i3), and Captain Singley (leader of Gabilan Crew #4) decided at that time to combine their crews and start a direct attack midway up the southeastern slope of the spot fire. Five C.D.F. engine companies were assigned to support the fire crews efforts with a hoselay. At this time the fire behavior was relatively static and they used the previously constructed dozer line as an anchor point and cut into the edge of the spot some 30-40 foot distance. The combined crews waited on the dozer line for the person in front to reach a 10 foot spacing at which time the next person would fall in and begin working. Captain Singley was working downhill and away from the accident scene, and at the front of the hand line with the saw operators. Captain Milani was uphill from the scene of the accident when it occurred.

The crews who were waiting to begin line construction were some 80 feet away from the base of the tree and all were using their headlamps in the dark. Those crewmembers were bunched up at the dozer line and were unable to see the base of the tree burning because of the heavy fuel and a knoll which blocked their line of sight.

At approximately 2205 hours the crews heard the unmistakable sound of a tree "cracking". When the crew members at the accident site looked up into the darkness they could see nothing and didn't know which way to run. Witness's stated that some of those in line of the falling tree reacted by freezing in their present locations, while others attempted to move away.

In some cases it is thought that some of the injured may have moved into greater danger. Captain Milani was but a few feet uphill from the impact area. He heard the tree "snap", and heard F.A.E. Royos shout a warning and realized the tree was falling in front of him. From his location he then realized the tree was falling on some of the crew and that there would be injuries.

All interviewed agreed that there was but a very brief time to react to the sudden danger.

F.A.E. Royos was at the scene, and a few feet below the impact area. He heard the "cracking" sound, shouted a warning, and dove downhill. F.A.E. Allen was standing near Royos when a moment later one of the injured was thrown into him from the impact of the tree. Within moments Engineer Royos and others began a triage and initiated immediate treatment for the injured. MAST helicopters from Fort Ord, and Hunter Liggett were used for transportation of the most seriously injured.

A synopsis of the injuries is as follows;

Hernandez A. (deceased) Gabilan crew #3

Multiple internal injuries, broken bones



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Buckner E.(Injured) Gabilan crew #3

Multiple injuries; broken: right shoulder and hip, two ribs, lower back fracture

Contusion: back of head. Recovering

Hubbard, R.(Injured) Gabilan crew #3

Broken arm, internal injury  
Recovering

Graybeal D(Injured) Gabilan crew #3

Leg Injury.  
Recovering

Knuthson, M. (Injured) Gabilan crew #3

Hand, leg injury, lower back pain  
Recovering

Matthews, R.(Injured) Gabilan crew #3

Facial injuries  
Recovering

Phillips, E.(Injured) Gabilan crew #3

Bruised shoulder, treated at scene  
Released back to crew

## CAUSE:

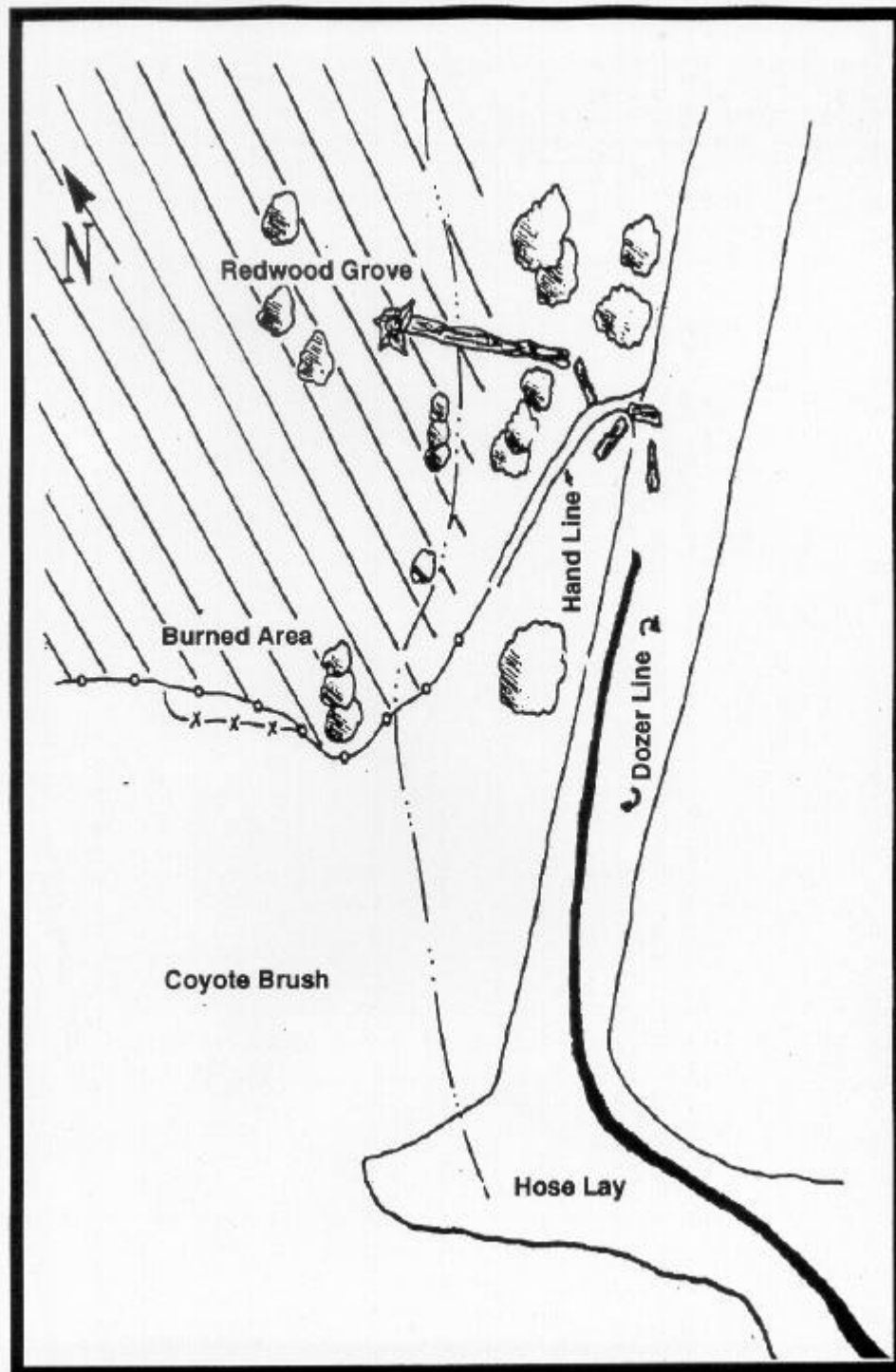
The accident was the result of a 150 year old Redwood tree (approximately 114 feet in length) falling and striking members of Gabilan Crew #3 while they waited on a dozer line to begin constructing a line around a spot fire. The crew was working at night and had no direct line of sight with the burning stump. The injured were bunched up on the dozer line waiting their turns in the hand line when the tree gave way and caught seven of them. The thousand hour fuel moisture is well below the critical level throughout the state, and this probably enhanced the already weakened condition of this trees stump.



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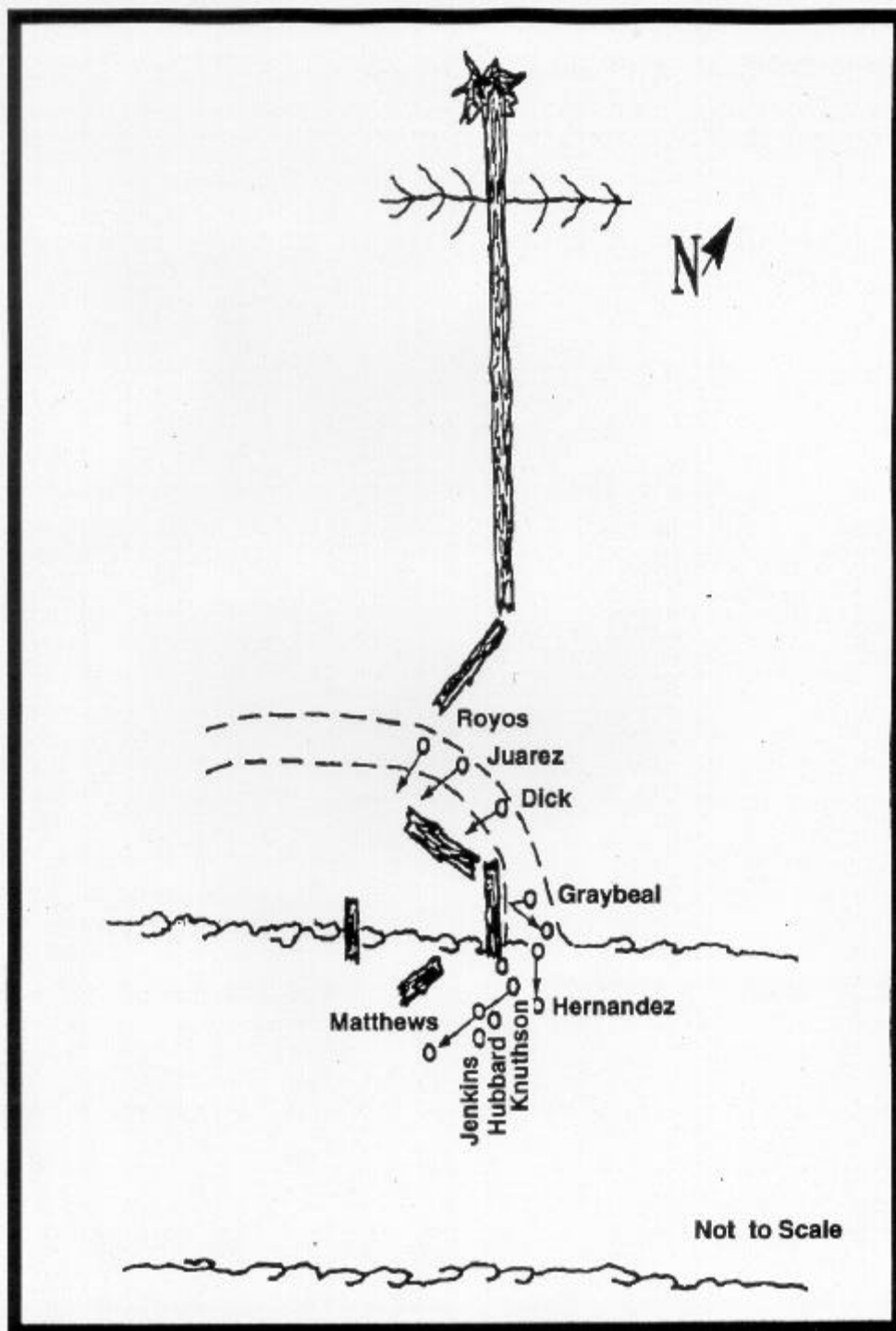




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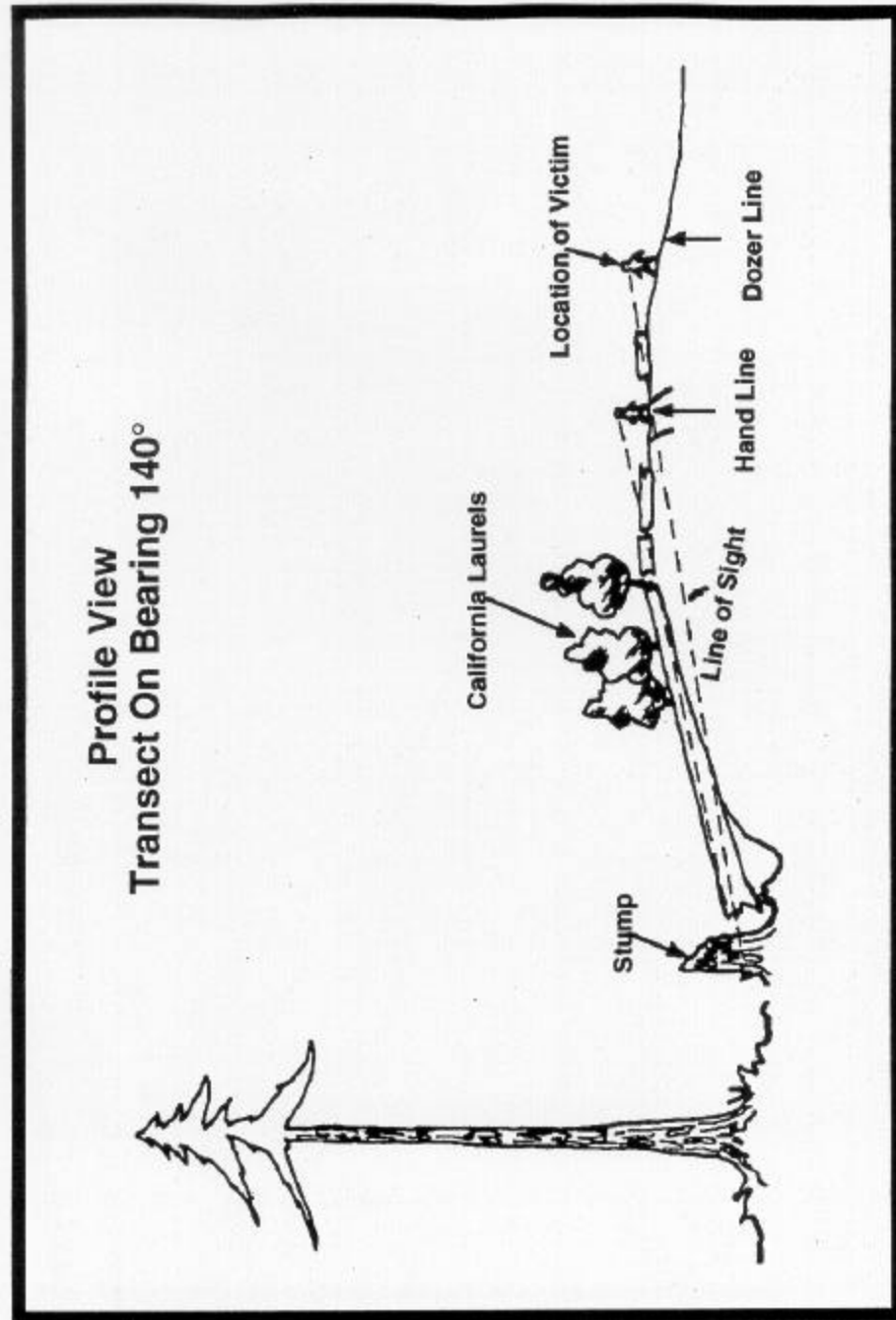




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## Fireline Hazards

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### PLANT AND ANIMAL HAZARDS

1859

(No. 6 January 1995)

Plant and animal hazards are common in wildland firefighting situations. Supervisors must ensure that employees are able to identify and avoid plant and animal hazards.

### POISON OAK

1859.1

(No. 6 January 1995)

CDF employees who may become exposed to poison oak must learn to recognize the plant in all its seasonal forms and when it has been burned.

Employees at risk of coming into contact with poison oak shall take the following precautions:

Fasten pant legs securely over boot tops.

Wear gloves at all times except when eating or touching skin.

- Avoid touching boots, the outside of gloves, and other gear with bare hands.
- Always wash hands thoroughly before touching skin.
- Wash exposed clothing separately in hot, soapy water.
- Clean tools and equipment with cleaning solvent before storing.
- If possible, avoid the smoke of burning poison oak since it is often more irritating than direct contact with the plant.

After working around poison oak, employees shall always assume they have been exposed and take the necessary precautions.

### TICKS

1859.2

(No. 6 January 1995)





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Ticks can be carriers of agents that cause Lyme and other diseases (see Section 1852, Occupational Infections). Ticks can be found in grasses and brush where they climb to the tips of vegetation, wait for a host to brush against them, and then attach to the host.

When working in an area likely to have ticks, employees shall take the following precautions.

- Tuck pants into boots or socks, and shirt into pants. Apply insect repellent on pants, socks, and shoes. Use a repellent registered for use against ticks.
- Search the body repeatedly (rest periods, lunch etc.) especially hairy regions and inside clothing as ticks seldom attach themselves within the first few hours.

Prompt removal of ticks may prevent disease transmission. Use tweezers or forceps to remove the tick, and try not to touch the tick directly with hands. If contact is unavoidable, use a tissue to protect hands. Grasp the tick as close as possible to the point of attachment and pull gently and repeatedly. Do not twist or jerk the tick and do not burn or cover the tick with heavy oils. If mouth parts of the tick break off and remain in the skin, consult a doctor. Save the tick for identification in a sealed container. Wash hands and bite site thoroughly and apply antiseptic to the bite. Dispose of the tick by flushing it down the toilet after identification.

## STINGING INSECTS

**1859.3**

(No. 6 January 1995)

Employees who have known severe allergies or react violently to insect bites shall not work in insect-infested areas during insect season.

If allergic to insect stings, the employee shall consult a physician for proper advice and vaccine or allergy medication before going into the field. Supervisors shall be informed of severe allergies.

When working near bees, wasps, or yellow jackets employees shall:

- Wear long-sleeved shirts with close-fitting collars.
- Keep pants tucked in boots or firmly secured over boots with band or strap.
- Avoid wearing strong-scented lotions -- they can attract bees.

## AFRICANIZED HONEY BEES

**1859.3.1**

(No. 6 January 1995)



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Africanized Honey Bees have established themselves as a potential public health threat in California. The bees are noted for extremely aggressive behavior when defending their nests. CDF personnel may be called upon to respond to incidents involving people being attacked by Africanized bees, or CDF personnel may encounter the bees during wildland or structural firefighting operations. CDF fire crews should adhere to the following guidelines when dealing with attacks by Africanized Honey Bees:

## **Perform a thorough size up.**

- Determine location and status of the victim and bee swarm.
- Stop a safe distance away to conduct a risk analysis.
- If the victim is down and bees are present, call for secondary responders to support the rescue.

## **Take safe actions.**

- The following equipment is considered a minimum for affecting a rescue of a victim under attack by Africanized bees: nomex pants/shirt worn over a full second layer of clothing; firefighting gloves; helmet; and bee veil. Shirt must be tucked into pants and cuffs/sleeves secured closed with duct tape or by other equivalent methods. Turnouts may be substituted for nomex if worn in a manner that prevents bees from crawling inside.
- A fog pattern flowing Aqueous Film Forming Foam (AFFF) (minimum concentration of 2%) will act as a killing agent to the bees.

## **Provide proper notification.**

- Provide ECC with exact location so they may notify the following as appropriate: secondary responders; hospitals; Department of Agriculture; bee specialists.

## **SNAKES**

**1859.4**

(No. 6 January 1995)

When working in areas where poisonous snakes are known to be present employees shall:

- Wear work boots.
- Be observant around areas obscured by foliage, or near ledges when walking or climbing in rocky country.
- Use a long bar or pole for moving material and timbers that have been stacked or piled. Never put hands under any stored material.



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- Probe the areas with a hiking stick or long-handled tool before stepping over logs or other material that may hide snakes.

## ANIMAL BITES

**1859.5**

(No. 6 January 1995)

If bitten by an animal, get medical attention and report to local health authorities or animal control officials (See Section 1852, Occupational Infections) Locate the animal if possible and report its whereabouts to public health officials. If the animal is killed, avoid damaging the head. Public health officials will need the animal (dead or alive) to make rabies tests.

## RODENTS

**1859.6**

(No. 6 January 1995)

Bubonic plague is transmitted by fleas carried by rodents such as chipmunks and rats and other small mammals. Avoid handling or touching these animals.

Report an unusually large number of dead rodents and small animals to local health authorities.